

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (CURRENTLY AMENDED) ~~An instrument for cleaning and/or shaping and/or widening a channel that exists in or through a solid object; characterized in that the inner volume enclosed by said instrument, the outer contour of said instrument, or both change during use in order to shape said instrument to the three dimensional contour of said channel~~ An instrument for cleaning and/or shaping and/or widening a channel that exists in or through a solid object; wherein at least of portion of the body of said instrument is comprised of longitudinal elements and circumferential elements that connect adjacent longitudinal elements, thereby defining the three dimensional shape of said portion of said body, such shape being an empty volume surrounding the longitudinal axis, said volume bounded radially by a wall having an open lattice-like structure, and wherein the design of said instrument and the material from which it is made allows said volume, the outer contour of said instrument, or both to change during use in order to shape said instrument to the three dimensional contour of said channel.

2. (CURRENTLY AMENDED) ~~An instrument according to claim 1, wherein the shape of the perimeter of said instrument adjusts during use to conform to the perimeter of the local cross section of the channel at each radial plane located along the length of said instrument that is inserted into said channel~~ An instrument according to claim 1, wherein the design of said instrument and the material of which said instrument is made allows the outer contour of said instrument to change during use to conform to the perimeter of the local cross section of the

channel at any radial plane located along the length of said instrument that is inserted into said channel.

3. (ORIGINAL) An instrument according to claim 1, wherein said instrument is made from a superelastic material.

4. (ORIGINAL) An instrument according to claim 1, wherein said instrument is made from material having shape memory properties.

5. (ORIGINAL) An instrument according to claim 4, wherein the material of which said instrument is treated after said instrument is produced to give it shape memory properties.

6. (ORIGINAL) An instrument according to claim 3, wherein the superelastic material is a nickel titanium alloy.

7. (ORIGINAL) An instrument according to claim 4, wherein the instrument having shape memory properties is made from a nickel titanium alloy.

8. (CURRENTLY AMENDED) An instrument according to claim 1, wherein ~~a single instrument can be inserted in the channel and used for the entire procedure of cleaning and/or shaping and/or widening said channel before being withdrawn~~ the design of said instrument and

the material of which said instrument is made allows a single instrument to be inserted into the channel and used for the entire procedure of cleaning and/or shaping and/or widening said channel before being withdrawn.

9. (CURRENTLY AMENDED) An instrument according to claim 1, wherein, if said instrument breaks inside the channel, ~~the broken piece of said instrument can be withdrawn from said channel without damaging the solid object~~ a specially designed extractor is used to withdraw the broken piece of said instrument from said channel without causing damage to the solid object.

10. (CURRENTLY AMENDED) An instrument according to claim 1, wherein ~~the body of said instrument is comprised of one or more longitudinal elements and one or more circumferential elements~~ the three-dimensional shape of the longitudinal and circumferential elements is chosen from the group comprising:

- blade shaped;
- polygonal prism shaped;
- rod shaped;
- curved shaped; and
- round shaped.

11. (CURRENTLY AMENDED) An instrument according to ~~claim 10~~ claim 1, wherein the longitudinal and circumferential elements have a ~~three-dimensional~~ cross-sectional shape chosen from the group comprising:

~~—blade shaped;~~
~~—polygonal prism shaped;~~
~~—rod shaped;~~
~~—curved shaped; and~~
~~—round shaped.~~

- polygonal;
- round;
- curved; and
- blade-shaped.

12. (CURRENTLY AMENDED) An instrument according to ~~claim 10~~ claim 1, wherein the longitudinal elements have a ~~cross-sectional shape chosen~~ shape selected from the group comprising:

- ~~—polygonal;~~
~~—round;~~
~~—curved; and~~
- ~~blade-shaped.~~
 - straight elements; and
 - curved elements.

13. (CURRENTLY AMENDED) An instrument according to ~~claim 10~~ claim 1, wherein the ~~longitudinal elements~~ circumferential elements have a shape selected from the group comprising:

- straight elements; and
- curved elements.

14. (CURRENTLY AMENDED) An instrument according to ~~claim 10~~ claim 1, ~~wherein the circumferential elements have a shape selected from the group comprising:~~

- ~~—straight elements; and~~
- ~~—curved elements.~~

wherein at least a part of the outer surface of said instrument is constructed or modified in one of the ways selected from the following group:

- a. at least part of the outer surface of said instrument is coated with a coating of a abrasive material;
- b. at least part of the outer surface of said instrument is roughened;
- c. at least part of the outer surface of said instrument comprises numerous small teeth; and,
- d. at least part of the outer surface of said instrument comprises a cutting edge; thereby allowing said instrument to remove material from the wall of the channel when relative motion takes place between said outer surface and said wall.

15. (CURRENTLY AMENDED) An instrument according to ~~claim 10~~ claim 14, wherein the ~~number of longitudinal elements is at least one and the circumferential elements are distributed~~

~~along the longitudinal axis of said instrument~~ the abrasive material is chosen from the group comprising:

- diamond powder;
- titanium nitride; and
- tungsten carbide.

16. (CURRENTLY AMENDED) ~~An instrument according to ~~claim 10~~ claim 14, wherein the longitudinal and circumferential elements define the three dimensional shape of said instrument, such shape being an empty volume surrounding the longitudinal axis, said volume bounded radially by a wall having an open lattice like structure~~ the relative motion is chosen from the group comprising:

- rotation;
- translation;
- vibration; and
- a combination of two or more of these motions.

17. (CURRENTLY AMENDED) ~~An instrument according to claim 1, wherein at least a part of the outer surface of said instrument is constructed or modified in such a way as to allow said instrument to remove material from the wall of the channel when relative motion takes place between said outer surface and said wall~~ An instrument according to claim 1, wherein debris resulting from the cleaning and/or shaping and/or widening can be removed from the channel

while said instrument is inserted and working in said channel as a result of one or both of the following features of the design of said instrument:

a. said instrument is designed such as to have a hollow interior through which said debris may be withdrawn; and,

b. said instrument is designed such as to have at least some of the circumferential elements project radially outward from the longitudinal elements, thereby creating a space through which said debris may be withdrawn.

18. (CURRENTLY AMENDED) An instrument according to claim 17, wherein ~~at least part of the outer surface of said instrument is coated with a coating of an abrasive material~~ fluid can flow into the channel through one or both of:

a. via the interior of said instrument; and,

b. via the space between the wall of the channel and the outer surface of said instrument;

while said instrument is inserted and working in said channel.

19. (CURRENTLY AMENDED) ~~An instrument according to claim 18, wherein the abrasive material is chosen from the group comprising:~~

~~— diamond powder;~~

~~— titanium nitride; and~~

~~— tungsten carbide.~~

An instrument according to claim 1, wherein, during the procedure of cleaning and/or shaping and/or widening the channel, a relatively uniform amount of material is removable from the wall of said channel along the entire insertion length of said instrument in said channel.

20. (CURRENTLY AMENDED) ~~An instrument according to claim 17, wherein at least part of the outer surface of said instrument is roughened~~ An instrument according to claim 1, wherein, during the procedure of cleaning and/or shaping and/or widening the channel, a different amount of material is removable from the wall of said channel at different positions along the insertion length of said instrument in said channel.

21. (CURRENTLY AMENDED) ~~An instrument according to claim 17, wherein at least part of the outer surface of said instrument comprises numerous small teeth~~ An instrument according to claim 1, wherein the material of which said instrument is made allows said instrument to be inserted into the channel such that it passes through the entire length of said channel.

22. (CURRENTLY AMENDED) ~~An instrument according to claim 17, wherein at least part of the outer surface of said instrument comprises a cutting edge~~ An instrument according to claim 1, wherein said instrument is inserted into the channel such that it passes through only a portion of the entire length of said channel.

23. (CURRENTLY AMENDED) ~~An instrument according to claim 17, wherein the relative motion is chosen from the group comprising:~~

- rotation;
- translation;
- vibration; and
- a combination of two or more of these motions.

An instrument according to claim 1, wherein, as a result of the design of said instrument and the material of which said instrument is made the cross-sectional shape of said channel, along the entire insertion length of said instrument that is inserted into said channel, is essentially the same after the procedure of cleaning and/or shaping and/or widening the channel as before said procedure.

24. (CURRENTLY AMENDED) ~~An instrument according to claim 1, wherein debris resulting from the cleaning and/or shaping and/or widening can be removed from the channel while said instrument is inserted and working in said channel~~ An instrument for cleaning and/or shaping and/or widening a channel that exists in or through a solid object, wherein said instrument comprises a long narrow balloon, which is inserted into said channel and then inflated.

25. (CURRENTLY AMENDED) ~~An instrument according to claim 24, wherein the debris is removed via the interior of said instrument~~ An instrument for cleaning and/or shaping and/or widening a channel that exists in or through a solid object, wherein the body of said instrument is comprised of one longitudinal element from which project radially a multitude of elements, wherein said instrument is made from one or both of the following:

- a. a superelastic material; and,

b. a material having shape memory properties;

thereby allowing the outer contour of said instrument to change during use in order to shape said instrument to the changing three dimensional contour of said channel.

26. (CURRENTLY AMENDED) ~~An instrument according to claim 24, wherein the debris is removed via the space between the wall of the channel and the outer surface of said instrument~~
An instrument according to claim 25, wherein said elements are selected from the following group:

a. blade-like; and,

b. wire-like.

27. (CURRENTLY AMENDED) ~~An instrument according to claim 1, wherein fluid can flow into the channel while said instrument is inserted and working in said channel~~
An instrument according to claim 1, wherein said instrument is an endodontic file, the channel is a root canal, and cleaning and/or shaping and/or widening of the channel comprises the cleaning, shaping, and widening stage of a root canal procedure.

28. (CURRENTLY AMENDED) ~~An instrument according to claim 27, wherein the fluid flows via the interior of said instrument~~
A method of using the instrument of claim 1 for cleaning and/or shaping and/or widening a channel that exists in or through a solid object said method comprising the following steps:

- inserting said instrument into said channel;

- causing relative motion between said instrument and the wall of said channel;
- optionally, removing the debris resulting from said cleaning and/or shaping and/or widening from said channel while said relative motion between said instrument and said wall of said channel takes place;
- optionally, causing fluid to flow into said channel while said relative motion between said instrument and said wall of said channel takes place; and
- removing said instrument from said channel when said cleaning and/or shaping and/or widening have been completed.

29. (CURRENTLY AMENDED) ~~An instrument according to claim 27, wherein the fluid flows via the space between the wall of the channel and the outer surface of said instrument~~ A method of using the endodontic file of claim 27 for cleaning, and/or shaping, and/or widening a root canal, said method comprising the following steps:

- inserting said file into said root canal;
- causing said file to move relative to the wall of said root canal;
- optionally, removing the debris resulting from said cleaning, shaping, and widening from said root canal while said file moves relative to said wall of said root canal;
- optionally, causing fluid to flow into said root canal while said file moves relative to said walls of said root canal; and
- removing said file from said root canal when said cleaning, shaping, and widening have been completed.

30. (CURRENTLY AMENDED) ~~An instrument according to claim 1, wherein, during the procedure of cleaning and/or shaping and/or widening the channel, a relatively uniform amount of material is removed from the wall of said channel along the entire insertion length of said instrument in said channel~~ A method according to claim 28, wherein more than one file is used to clean, and/or shape, and/or widen the channel.

31. (CURRENTLY AMENDED) ~~An instrument according to claim 1, wherein, during the procedure of cleaning and/or shaping and/or widening the channel, a different amount of material is removed from the wall of said channel at different positions along the insertion length of said instrument in said channel~~ A method according to claim 29, wherein more than one file is used to clean, and/or shape, and/or widen the channel.

32. - 39. CANCELED